Amendments to the Claims

The listing of claims below is intended to replace all prior listings of claims presented in the above-identified application.

1-13 (Canceled)

14. (New) A process for forming an integral, unsupported, multizone microporous membrane having at least two zones, comprising the acts of:

operatively positioning relative to a continuously moving coating surface at least one polymer applying apparatus having at least two polymer dispensing outlets in chambers with a front wall and a back wall and a separating wall between the front wall and the back wall defining the volumes of the chambers;

cooperatively applying polymer from each of the polymer dispensing outlets onto the continuously moving coating surface so as to create a multiple layer polymer coating on the coating surface, wherein the polymer is dispensed from the chambers by gravity, fluid pressure, or pumping;

subjecting the multiple polymer layer coating to a phase separation procedure so as to form a wet multizone microporous membrane; and

separating the wet multizone microporous membrane from the continuously moving coating surface at some point prior to complete drying of the membrane.

15. (New) A process for forming an integral, unsupported, multizone microporous membrane having at least two zones, comprising the acts of:

operatively positioning at least one polymer applying apparatus having at least two polymer dispensing outlets relative to a continuously moving coating surface;

cooperatively applying polymer from each of the polymer dispensing outlets onto the continuously moving coating surface so as to create a multiple layer polymer coating on the coating surface, wherein the thicknesses of each layer can be controlled by one or more factors selected from the group consisting of gap distance, solution viscosity, coating surface speed, polymer fluid pressure, and pumping of polymer solutions through the polymer dispensing outlets;

subjecting the multiple polymer layer coating to a phase separation procedure so as to form a wet multizone microporous membrane; and

separating the wet multizone microporous membrane from the continuously moving coating surface at some point prior to complete drying of the membrane.

16. (New) An integral, unsupported, multizone microporous membrane having at least two zones prepared by a process comprising the acts of:

operatively positioning relative to a continuously moving coating surface at least one polymer applying apparatus having at least two polymer dispensing outlets in chambers with a front wall and a back wall and a separating wall between the front wall and the back wall defining the volumes of the chambers;

cooperatively applying polymer from each of the polymer dispensing outlets onto the continuously moving coating surface so as to create a multiple layer polymer coating on the coating surface, wherein the polymer is dispensed from the chambers by gravity, fluid pressure, or pumping;

subjecting the multiple polymer layer coating to a phase separation procedure so as to form a wet multizone microporous membrane; and

separating the wet multizone microporous membrane from the continuously moving coating surface at some point prior to complete drying of the membrane.

17. (New) An integral, unsupported, multizone microporous membrane having at least two zones prepared by a process comprising the acts of:

operatively positioning at least one polymer applying apparatus having at least two polymer dispensing outlets relative to a continuously moving coating surface;

cooperatively applying polymer from each of the polymer dispensing outlets onto the continuously moving coating surface so as to create a multiple layer polymer coating on the coating surface, wherein the thicknesses of each layer can be controlled by one or more factors selected from the group consisting of gap distance, solution viscosity, coating surface speed, polymer fluid pressure, and pumping of polymer solutions through the polymer dispensing outlets;

subjecting the multiple polymer layer coating to a phase separation procedure so as to form a wet multizone microporous membrane; and

separating the wet multizone microporous membrane from the continuously moving coating surface at some point prior to complete drying of the membrane.

18. (New) A process for forming an unsupported, multizone microporous membrane having at least two zones, comprising the acts of:

operatively positioning at least one polymer applying apparatus having at least two polymer dispensing outlets relative to a coating surface;

cooperatively applying polymer from each of the polymer dispensing outlets onto the coating surface so as to create a multiple layer polymer coating on the coating surface, wherein the polymer is dispensed from the chambers by gravity, fluid pressure or pumping;

subjecting the multiple polymer layer coating to a phase separation procedure so as to form a wet multizone microporous membrane; and

separating the wet multizone microporous membrane from the coating surface at some point prior to complete drying of the membrane.

19. (New) A process for forming an unsupported, multizone microporous membrane having at least two zones, comprising the acts of:

operatively positioning at least one polymer applying apparatus having at least two polymer dispensing outlets relative to a coating surface;

cooperatively applying polymer from each of the polymer dispensing outlets onto the coating surface so as to create a multiple layer polymer coating on the coating surface, wherein the thicknesses of each layer can be controlled by one or more factors selected from the group consisting of gap distance, solution viscosity, coating surface speed, polymer fluid pressure, and pumping of polymer solutions through the polymer dispensing outlets;

subjecting the multiple polymer layer coating to a phase separation procedure so as to form a wet multizone microporous membrane; and

separating the wet multizone microporous membrane from the coating surface at some point prior to complete drying of the membrane.

20. (New) An unsupported, multizone microporous membrane having at least two zones prepared by a process comprising the acts of:

operatively positioning relative to a coating surface at least one polymer applying apparatus having at least two polymer dispensing outlets in chambers with a front

wall and a back wall and a separating wall between the front wall and the back wall defining the volumes of the chambers;

cooperatively applying polymer from each of the polymer dispensing outlets onto the coating surface so as to create a multiple layer polymer coating on the coating surface, wherein polymer is dispensed from the chambers by gravity, fluid pressure, or pumping;

subjecting the multiple polymer layer coating to a phase separation procedure so as to form a wet multizone microporous membrane; and

separating the wet multizone microporous membrane from the coating surface.

21. (New) An unsupported, multizone microporous membrane having at least two zones prepared by a process comprising of the acts of:

operatively positioning at least one polymer applying apparatus having at least two polymer dispensing outlets relative to a coating surface;

cooperatively applying polymer from each of the polymer dispensing outlets onto the coating surface so as to create a multiple layer polymer coating on the coating surface, wherein the thicknesses of each layer can be controlled by one or more factors selected from the group consisting of gap distance, solution viscosity, coating surface speed, polymer fluid pressure, and pumping of polymer through the polymer dispensing outlets;

subjecting the multiple polymer layer coating to a phase separation procedure so as to form a wet multizone microporous membrane; and

separating the wet multizone microporous membrane from the coating surface.

22. (New) The process of claim 12, 14, or 18, wherein the polymer is dispensed from the chambers using fluid pressure or pumping.

23. (New) The process of claim 12, 14, or 18, wherein the back wall is held above the continuously moving coating support to form a back wall gap, and said back wall gap, support speed, and polymer solution viscosity are adjusted to prevent the polymer solution from leaking out through the back wall gap.

24. (New) The process of claim 23, wherein the polymer is dispensed from the chambers using fluid pressure.

25. (New) The process of claim 23, wherein the polymer is dispensed from the chambers using pumping.

26. (New) The membrane of claim 16 or 20, wherein the membrane is prepared by having a polymer dispensed from the chambers using fluid pressure or pumping.

27. (New) The membrane of claim 16, wherein the membrane is prepared by having the back wall held above the continuously moving coating support to form a back wall gap, and said back wall gap, support speed, and polymer solution viscosity are adjusted to prevent the polymer solution from leaking out through the back wall gap.

28. (New) The membrane of claim 27, wherein the membrane is prepared by having a polymer dispensed from the chambers using fluid pressure.

29. (New) The membrane of claim 27, wherein the membrane is prepared by having the polymer dispensed from the chambers using pumping.

30. (New) The process of claim 12, 14, or 18, wherein the chambers can be heated or cooled.

31. (New) The process of claim 12, 14, or 18, wherein the polymer comprises:

nylon.

32. (New) The process of claim 12, 14, or 18, wherein the polymer comprises:

polyvinylidene fluoride.

33. (New) The process of claim 12, 14, or 18, wherein the polymer comprises:

polyethersulfone.

34. (New) The process of claim 12, 14, or 18 further comprising the acts of:

washing and drying the membrane.

35. (New) The process of claim 12, 14, or 18, wherein the zones of the multizone microporous membrane have different pore sizes.

36. (New) The membrane of claim 16 or 20, wherein the membrane can be prepared by having the chambers heated or cooled.

37. (New) The membrane of claim 16 or 20, wherein the polymer comprises:

nylon.

38. (New) The membrane of claim 16 or 20, wherein the polymer comprises:

polyvinylidene fluoride.

39. (New) The membrane of claim 16 or 20, wherein the polymer comprises:

polyethersulfone.

40. (New) The membrane of claim 16 or 20, wherein the membrane is prepared by a process further comprising the acts of:

washing and drying the membrane.

41. (New) The membrane of claim 16 or 20, wherein the zones of the multizone microporous membrane have different pore sizes.

42. (New) The process of claim 13, 15, or 19, wherein the thicknesses of the layers are controlled by factors selected from the group consisting of solution viscosity, coating surface speed, polymer fluid pressure, and pumping of polymer solutions through the polymer dispensing outlets.

43. (New) The process of claim 13, 15, or 19, wherein the solution viscosity is controlled by heating or cooling of the chambers.

44. (New) The process of claim 13, 15, or 19, wherein the thicknesses of the layers is controlled by polymer fluid pressure and pumping of polymer solutions through the polymer dispensing outlets.

45. (New) The membrane of claim 17, wherein the membrane is prepared by having the thicknesses of the layers controlled by factors selected from the group consisting of solution viscosity, coating surface speed, polymer fluid pressure, and pumping of polymer solutions through the polymer dispensing outlets.

46. (New) The membrane of claim 21, wherein the membrane is prepared by having the thicknesses of the layers controlled by factors selected from the group consisting of solution viscosity, polymer fluid pressure, and pumping of polymer solutions through the polymer dispensing outlets.

47. (New) The membrane of claim 17 or 21, wherein the solution viscosity is controlled by heating or cooling of the chambers.

48. (New) The membrane of claim 17 or 21, wherein the thicknesses of the layers is controlled by polymer fluid pressure and pumping of polymer solutions through the polymer dispensing outlets.